

MATERIALS OPERATIONAL MEMORANDUMS
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MATERIALS SECTION**MATERIALS OPERATIONAL MEMORANDUM NO. 2**

DATE OF ISSUE: November 24, 1998

SUBJECT: Nominal Thickness of Asphalt Pavement Course and Class of Asphaltic Plantmix

FOR THE SPECIAL ATTENTION OF: District Materials Engineers

DATE OF REVIEW: November, 1999

The purpose of this memorandum is to establish the HQ Materials policy on the thickness of individual asphaltic pavement courses (lift thicknesses) and class of asphaltic plantmix.

Pavement Lift Thickness:

This policy is intended to update the minimum pavement thickness requirement in [Section 510.07](#) of the Materials Manual. NAPA literature recommends a minimum lift thickness of 3 to 4 times the nominal maximum aggregate size to provide a proper compaction platform. For example, with a nominal maximum aggregate size 19mm (3/4") aggregate, the minimum appropriate lift thickness is 60 mm (0.20').

Lift thicknesses of 3 times the nominal maximum aggregate size shall be required. Pavement designs which incorporate thinner lifts should be individually justified and shall be evaluated on a case by case basis.

Class of Asphaltic Plantmix:

As there is no currently active HQ policy on this issue, this is a new policy.

The following guidelines for class of asphaltic plantmix as per Section 405 of the Standard Specifications are recommended as the minimum selection criteria for flexible pavement:

Class	Jurisdiction / Traffic of Route
I	All Interstate and NHS routes All other routes with Truck ADT > 1000 (high volume)
II	All other routes with 250 < Truck ADT < 1000 (medium volume)
III	All other routes with Truck ADT < 250 (low volume)

Exceptions to the above minimum criteria should be individually justified and shall be evaluated on a case by case basis. The selection of a higher class of plantmix than described above for a project need not be justified.

Direct any questions to the HQ Materials Project Development Engineer or the Pavement Engineer.



Michael G. Dehlin, P.E.
Materials Project Development Engineer

MATERIALS SECTION**MATERIALS OPERATIONAL MEMORANDUM NO. 3**

DATE OF ISSUE: February 4, 1998

SUBJECT: HQ Materials Policy on Requirements for Materials Phase Reports

FOR THE SPECIAL ATTENTION OF: Assistant District Engineers, Project Development
Engineers, District Materials Engineers

DATE OF REVIEW: February, 1999

The purpose of this memorandum is to clarify the HQ Materials policy on the submittal and approval requirements for Materials Phase Reports.

This policy is intended to be consistent with ITD Design Standards, and funding program requirements. Background information for this policy is as follows:

“Circle M” is a designation for a project the main purpose of which is to improve the cracking and rutting indexes of the roadway. Certain federal funds are allocated for this purpose and channelled through the various funding categories. Therefore, “Circle M” can be referred to as a funding emphasis, but not as a “funding category” (ie. IM, STP, etc.). The Circle M designation allows the project to be tracked for the purpose of reporting the number of miles of roadway for which the ride has been smoothed out and the dollars spent for this purpose. Projects meeting certain criteria (\$/In-mi, surface work only, etc.), regardless of funding category or required design standard, are given the Circle M designation, but the Circle M designation in and of itself does not represent a design standard. The Department sets a goal of spending a certain amount every year on projects which can be designated Circle M. However, the Circle M designation does not justify the omission of any steps in the design process, including the submission and review of Materials Reports.

1R (Pavement Rehabilitation) is the minimum design standard required for a project to qualify for federal funding. The 1R standard requires that a project be designed for a minimum of an 8 year design life. Section 736 of the Design Manual states that the primary goal of the 1R standard is to rehabilitate pavements where a maintenance treatment would not be cost effective, but has not yet deteriorated to the point of needing major treatment or reconstruction. All projects with a 1R Design Standard are designated Circle M projects, but the Circle M designation does not necessarily imply a 1R Design Standard. State funded Circle M projects not on the NHS are not required to meet the 1R Design Standard.

A project may also require guardrail, shoulder work, etc. Such work must be paid for from a separate funding category than that receiving the Circle M designation. Otherwise, the project no longer qualifies as a Circle M.

The 3R (Resurfacing, Restoration, and Rehabilitation) design standards (NHS and Interstate) are intended to extend the service life of the existing highway and, at the same time, improve highway safety by making selective improvements to highway geometry and roadside features. A project meeting the 3R NHS standard can have as little as an 8 year design life, but any less than a 20 year design life must be justified.

The State Design Standards cover federally funded project not on the NHS. There are no design standards for state funded projects not on the NHS.

Therefore, the requirements for submittal and approval of Materials Phase Reports are as follows:

HQ approved Materials Phase Reports are required for all federally funded projects including those not on the NHS (those not requiring FHWA oversight).

State funded projects which are on the NHS require the same level of standards, design, and review as federally funded projects, therefore, HQ Materials concurrence with the Materials Phase Reports for these projects is required.

The State Design Criteria for non-NHS routes is a 20 year design life for reconstruction and 10 years for rehabilitation. Therefore, HQ Materials concurrence with the Materials Reports for these projects is appropriate, but not required when they are State funded. As stated above, HQ approval of federally funded projects not on the NHS is required. State funded minor rehabilitation projects not on the NHS do not necessitate HQ concurrence.

All Phase Reports should be submitted to HQ Materials so that copies of all Phase Reports can be stored in and distributed from one central location.

The HQ Materials policy is to approve Materials Phase Reports for federally funded projects and comment only on state funded projects not on the NHS. The elimination of any Materials Phase Report should be evaluated and justified on a case by case basis.

The transmittal of Materials Phase Reports for state funded projects not on the NHS is considered a courtesy extended to HQ by the Districts.

The HQ Materials Section has the responsibility to review and comment on every report, regardless of funding source. In the case of state funded projects not on the NHS, the Phase Reports do not require HQ approval, and HQ Materials comments should be taken as suggestions rather than as requirements. In this situation our position is that, at the discretion of the District, a resubmittal of the report addressing out comments is not required.

All structural elements of the roadway should be designed and all minimums and maximums provided in the Materials Manual should be adhered to regardless of the source of funding. The exception to this rule is defined by [Section 540.03.11](#), which, for projects such as railroad crossings, allows the pavement structure to meet or exceed that of the surrounding roadway.

Further information, such as which types of construction/reconstruction/rehabilitation/maintenance procedures are eligible for specific projects (with respect to funding program), is available upon request. Although related, these policies have been covered in correspondence from various Sections previously. It is not the purpose of this memorandum to cover such policies.

The above information is subject to change as per decisions by the FHWA and executive management.

We recognize the need for the prompt review and return of comments on Materials Reports and Design Reviews. It is our policy to expedite the review and return of comments on a report or design within two weeks if possible. However, there may be extenuating circumstances which will not allow such a timeline. Such circumstances may include the necessity of field investigation, the resolution of our concerns pertaining to the report or review; the volume of reports and reviews being processed at that time, and construction related duties of the HQ Materials Section.

Direct any questions to the HQ Materials Project Development Engineer.

A handwritten signature in black ink, appearing to read "Michael G. Dehlin". The signature is fluid and cursive, with a horizontal line extending from the end of the name.

Michael G. Dehlin, P.E.
Materials Project Development Engineer

MATERIALS SECTION

MATERIALS OPERATIONAL MEMORANDUM NO. 4

DATE OF ISSUE: December, 1998

SUBJECT: PREPARING MATERIALS PHASE IV FOUNDATION INVESTIGATION REPORT
FOR LOAD RESISTANCE FACTOR DESIGN (LRFD) METHOD

FOR THE SPECIAL ATTENTION OF: District Materials Engineers and Engineering Geologists

DATE OF REVIEW: December 1999

The purpose of this memorandum is to establish the HQ Materials policy on preparing the Materials Phase IV foundation Investigation report for a structure for which the foundation will be designed following the Load Resistance Factor Design (LRFD) method.

When LRFD method is to be used, [Section 250.00](#) Foundation Investigation Report in the Materials Manual should be changed as follows:

Section 250.05.02.01 Spread Footings.

All required information and recommendations in this section remain the same except that:

- The **presumptive ultimate soil or rock bearing capacity** (estimated from local experience) should be recommended instead of the **allowable bearing capacity** and the following additional information is also required:
 - Soil/rock properties, including unit weight and shear strength.
 - Methods used to determine the soil/rock strength, such as
 - Semi-empirical procedure using SPT or CPT data,
 - Lab tests, such as direct or triaxial shear strength tests, or field tests, such as van shear tests, pressuremeter, etc.

NOTE: The method used to determine soil/rock shear strength is important in the LRFD method and will be required in the report.

- The soil/rock shear strength used in estimating the coefficient of friction between the footing and soil/rock, and the method used in determining soil/rock shear strength will be required in the report.

Section 250.05.02.02 Deep foundations

All required information and recommendations in this section remain the same except that:

Pile Foundations

- The **ultimate pile bearing capacity** should be recommended instead of the allowable bearing capacity and the following additional information is also required:
 - The method used in calculating the ultimate bearing capacity of the pile, including methods used in calculating the end bearing, the shaft friction and uplift resistance.

- Recommended method used to determine pile bearing capacity during construction, such as pile driving dynamic formula or Wave Equation analysis. (Note that all pile driving jobs in Idaho are controlled by the Wave Equation analysis).
- If the Pile Dynamic Analyzer (PDA) is recommended for pile driving monitoring, indicate the recommended number of piles to be monitored by the PDA.

Drilled Shaft Foundations:

- **Ultimate bearing capacity** of a single drilled shaft should be reported instead of the allowable bearing capacity. The following additional information and recommendations are also required:
 - Method used in calculating the end bearing, side friction, uplift resistance.

Section 250.05.03 Lateral Pressures and Backfill

All information and recommendations in this section remain the same except that the methods used in estimating the soil or rock unit weight and friction angle should be reported.

Retaining Walls

Same as Spread Footings.

Direct any questions to the Geotechnical Engineer at HQ's Materials Section.



Tri Buu, P.E.
Geotechnical Engineer

MATERIALS SECTION**MATERIALS OPERATIONAL MEMORANDUM NO. 6**

DATE OF ISSUE: July 6, 1999

SUBJECT: Tolerances for Asphalt Mix Design Confirmation

FOR THE SPECIAL ATTENTION OF: District Materials Engineers, District Independent Assurance Inspectors, and Resident/Regional Engineers and their Project Inspectors

DATE OF REVIEW: July 2000

TOLERANCES FOR ASPHALT MIX DESIGN CONFIRMATION**Target Gradation**

Before mix testing can begin, the target gradation of the aggregate split received by ITD shall not disagree on any individual screen with the target gradation submitted by the contractor more than the tolerances shown below. The difference(s) in gradation shall not cause a change of more than $3.0 \pm$ in the total surface area.

<u>Sieve Size</u>	<u>Tolerance, % (\pm)</u>
25 mm (1 in)	3.0
19 mm (3/4 in)	3.0
12.5 mm (1/2 in)	3.0
9.5 mm (3/8 in)	3.0
4.75 mm (No. 4)	3.0
2.36 mm (No. 8)	3.0
1.18 mm (No. 16)	2.0
600 μ (No. 30)	2.0
300 μ (No. 50)	2.0
150 μ (No. 100)	2.0
75 μ (No. 200)	1.0

Hveem Stability

The stability on the contractor's mix design test report must equal or exceed specified stability at the job mix asphalt content. If ITD confirmation tests at the job mix asphalt content yield stability that also equals or exceed specified stability, then the contractor's stability results are confirmed. If ITD confirmation test results are below specified stability, then the contractor's stability results are considered to be confirmed only if the contractor and ITD stabilities (each recorded to the nearest integer) do not differ by more than six (6) stability points and if the average of the two (rounded to the nearest integer) is not less than the specified stability.

MATERIALS SECTION

MATERIALS OPERATIONAL MEMORANDUM NO. 6

Mix Air Voids

The contractor's design air void(s) must meet ITD air void specifications of 3.0% to 5.0%. If the contractor's design results and ITD's results disagree not more than 1.5% and ITD's results do not fall beyond the specification limits of 3.0% to 5.0% by more than 0.5%, the two design air voids are considered comparable and the contractor's air void(s) is confirmed.

Voids Mineral Aggregate (VMA)

If the contractor's VMA meets the minimum specification and ITD's VMA falls below the minimum specification by no more than 1.5%, the contractor's VMA is confirmed.

Asphalt Film Thickness (AFT)

The contractor's design shall have a minimum of 6 microns. If ITD's AFT falls below the specification of 6 microns minimum, the confirmation will be based solely on the judgment of ITD.

Index of Retained Strength (IRS), Immersion Compression

The contractor shall submit a design that provides a minimum result of 85% IRS. If ITD's results fall below the minimum of 85%, confirmation will be based solely on the judgment of ITD. Past source file data, if any, should be utilized to make this judgment.

Maximum Theoretical Density

The difference between any two labs cannot exceed 32 kg/m³ (2.0 pcf). This difference is independent of and does not supersede the air void specification and confirmation tolerance.

Unit Weight of Mix, Compacted

The difference between any two labs cannot exceed 32 kg/m³ (2.0 pcf). This difference is independent of and does not supersede the air void specification and confirmation tolerance.



Tom S. Baker, P.E.
Materials Engineer

MATERIALS SECTION

MATERIALS OPERATIONAL MEMORANDUM NO. 8

DATE OF ISSUE: June 29, 2000

SUBJECT: Pavement Seal Coats

FOR THE SPECIAL ATTENTION OF: District Materials Engineers
District Project Development Engineers

DATE OF REVIEW: June, 2001

The purpose of this memorandum is to implement ITD's policy of seal coats. This is a new policy.

The following paragraph is added to Materials Manual Section 210.1:

New asphalt pavements including overlays on projects developed or constructed after January 1, 2001 shall not be sealed in the first 3 or 4 years following construction unless the surface actually shows signs that a seal coat is needed. No seal coats will be placed on new pavements unless the need can be justified to the satisfaction of Headquarters' Materials and Maintenance Sections.

Direct questions to Headquarters' Materials Section.



Tom S. Baker, P.E.
Materials Engineer

MATERIALS SECTION**MATERIALS OPERATIONAL MEMORANDUM NO. 9**

DATE OF ISSUE: August 2, 2001

SUBJECT: Materials Source Approvals

FOR THE SPECIAL ATTENTION OF: Resident / Regional Engineers, District Materials Engineers

DATE OF REVIEW: August, 2002

The purpose of this memorandum is to clarify procedural issues on requirements that must be met for approval of materials sources for use on ITD projects. This memorandum is intended to augment current guidance elsewhere in the Materials Manual, Construction Manual, and Standard Specifications.

ITD owned sources:

Procedures for materials source investigation are addressed in the references above.

Privately owned (non-ITD) sources:

ITD expects compliance with all federal, state, and local laws and regulations controlling pollution, contamination of the environment, and cultural resources. ITD expects all reasonable precautions to be taken for compliance with said laws and regulations before, during, and after any investigation of the materials source.

All material is to be associated with the site where the material was originally extracted from its natural location.

Attached is an example letter for requesting approval to use a Contractor Furnished Source.

Direct any questions to the HQ Materials Project Development Engineer.



Michael G. Dehlin, P.E.
Materials Project Development Engineer

[Current Date]

Mr. or Ms. _____
Resident Engineer
P.O. Box 837
Lewiston, ID 83501

RE: [Project Number]; [Key Number]
[Project Name]; Request for Approval to Use Contractor Furnished Source

Dear Mr. _____:

In accordance to Subsection 106.09, I am requesting to utilize Source ____ on the above referenced project. Below is the required Source information:

ITD Source Number:	_____	
Source Location	_____	
Source Owner	_____	
Approved Reclamation Plan (§107.17)	_____	
Number:	_____	
Cultural Resource (§107.18)	_____	
Clearance Date:	_____	
Environmental Impact or Permit	_____	<u>If Applicable</u>
Approval Date:	_____	
Source Plat Number and Date:	_____	
Laboratory Test Number(s):	_____	

I am requesting this source be approved for the production of the following items on this project:

Item Number	Item	Quantity
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Attached is a copy of the test report(s) documenting that this source will produce material that meet the quality and design standards specified in this contract.

Sincerely,

CONTRACTOR